

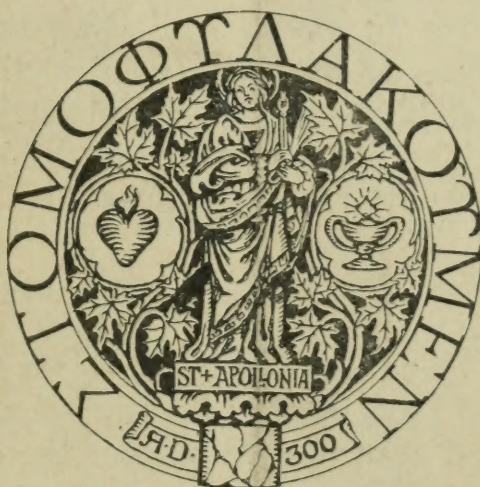
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Pyorrhea And Its Treatment

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Pyorrhea And Its Treatment

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A lecture delivered before the Indiana State Dental Association, May, 1920.

The matter upon which I am asked to speak is that of protecting our patients in the treatment of pyorrhœa. I have had an ambition all my life to make dentistry somewhat better than I found it. I think the activating force that led me into that view was the continued failure noted during my college course and for some years after graduation, in the care of mouth infections; and the facts that I had the privilege of graduating in medicine in connection with my dental work, and have taught in the school of medicine in the University of Minnesota continuously since 1890, have kept me in touch in a rather broad way with human ills. I have had the privilege of serving with a group of men on the staff of the teaching hospital ever since we have had one, and instituted in the institution a course in mouth sanitation which has so convinced the members of my faculty in medicine of its value that they have established it on a firm basis, with a trained nurse, whose business it is to carry out the instructions of its supervisor, and train the other nurses in the principles of prophylaxis.

I was gratified at what I heard in the paper of your president, and I have but one suggestion to make on his recommendation to start a campaign for prophylaxis through the state for the laity, and that is, that he start that campaign by a very thorough and accurate training of the dental profession first of all. I have noticed that streams never rise higher than their sources, and that the average dentist does not pay enough attention to the condition of the human mouth to know when he sees infection.

I have been called into consultation many times by physicians to act on the work of previous dentists who had not recognized anything in the mouth to criticize. That condition among ourselves must be corrected before we can carry on a successful campaign among the laity, because, we must know before we can teach others, and know much more than we attempt to teach.

It has been my ambition to simplify this question of pyorrhœa. I want to touch for a moment on its history. During

the past week I have been reading a little book that was published in 1701 by a member of the faculty of the College of Medicine, of Montpellier, France, in which he states some principles in regard to the treatment of cancer which have been neglected by the profession of the present day. I have found in books published long ago evidence of the fact that the men of a couple of hundred years ago understood the problem of pyorrhœa, and presently, perhaps, I shall find that the very things we are trying to teach now were taught many years ago.

I want to read a portion of a translation from the works of Pierre Fouchard, published in 1746: "There is yet another species of scurvy, of which I think no other author has as yet had occasion to speak, and which, without affecting other parts of the body, attacks the gums, the alveoli, and the teeth. Not only are the soft, livid and swollen gums plainly affected, but those that are free from those vices are not exempt. It is to be recognized by a white, sticky pus, which can be made to come out by pressing the finger firmly from above downward, on the upper jaw, and from below upward, on the lower jaw. This pus comes out between the gums and the body of the alveoli, and sometimes between the alveoli and the roots of the teeth, which happens more frequently on the external surface of the jaw than the internal. We can refer, as the cause of this disease, to a rupture and disunion of the capillaries, produced by degeneration of the fluids that circulate through them. (That is Talbot's theory.) These fluids have extravasated into the intermediary spaces, or in the neighborhood of some of the vessels, which they have affected; and they break down, forming ulcers or fistulas. From this source is derived the prurient matter which is seen to issue from between the teeth and the borders of the gums. The effect is that those who have treated this disease with external remedies never succeed in curing it, which might give rise to the opinion that the disease comes from an internal or systemic cause. To assure myself of the incorrectness of this conclusion I have noticed that wherever the teeth have been lost from this disease, the alveoli and the gums become so well re-formed that no pus comes from them. I should conclude that this disease cannot be radically cured until the defective teeth are out of the mouth. (With that I disagree.) Keep the mouth clean, lance the gums when necessary, rub vigorously each day with a finger dipped in an astringent. It is necessary to cleanse

the mouth well after each meal with a little water and wine mixed together. (You can't do that now!) Be careful and bear down firmly with the finger on the gums in rubbing them to expel the pus."

That is a good picture of pyorrhœa, isn't it? and it was written in 1746! A little rough as to his etiology, but when you think of the period in which it was written, you find it to be a classical picture.

It was once my fortune to sit beside Dr. L. D. Shepard, who was a personal friend and member of the same society with the late Dr. Riggs, and he gave me the "Transactions of the Connecticut Valley Dental Society" as a present. In these "Transactions" I found a resolution which gave Dr. Riggs great credit for a new and successful method of treating pyorrhœa, and the occasion of the receipt of that gift by me was that I was making an address upon this same subject in the city of Boston, where Dr. Riggs lived a part of his lifetime. The donor of the book was a close personal friend of Dr. Riggs, who saw him operate.

I mention these things that you may know that I am not taking a narrow view of the subject we are about to discuss, and that I appreciate that the disease itself is as old as mankind; also that much good has been done in the treatment of pyorrhœa by the men who have gone before. I do believe, however, that we have succeeded less well with it than with almost any other disease commonly known.

My endeavor has been to try to determine the cause of this failure, and I think it is chiefly because we have not understood its etiology. If we have understood its etiology, we have not acted upon our knowledge.

I am going to make a few dogmatic statements. I believe them, and believe I have documentary evidence and laboratory experience to prove every statement I make. I am going to make the broad statement that pyorrhœa *could not exist* except for the bacterial growth on the teeth. It would be impossible to have either a pyorrhœa or a gingivitis of continued presence without bacterial growth on and around the teeth. *Bacterial invasion* of the tissues is the great factor. There are three or four other factors in the condition we are discussing as pyorrhœa. Briefly, they are malocclusions, which create congestions which make easy the invasion of the softer tissues by the bacteria growing on the teeth. The matter of diet is a very great factor. I do not know whether to rank

diet or malocclusion second. I rank bacterial invasion first. Malocclusion and diet are about equal in their power to reduce the vitality of the tissues and permit bacterial invasion.

Those of you who know anything about the northern countries of Scandinavia know that among the poor who have meagre plots of land, and who grow a comparatively small amount of crops, and who take their goats to the mountains in the summer, they do not lay up a store of vegetables sufficient to carry them through the winter. The children come through the winter into the spring with gums inflamed and swollen, and hanging away from their teeth; and they do not improve that condition until the oranges come in from Spain, and they get the acid that is necessary to remove the bad effects of their faulty winter diet.

You who follow the work of Howe, who has told us he could feed guinea pigs on a scorbutic diet and produce inflammations of tremendous import, will readily understand this condition. You who listened to Major Wells, of Toronto, who came to our city recently with a paper on "Scurvy and Rickets," in which he showed us the pulps of many teeth of guinea pigs and monkeys which had been killed by placing the animals on a scorbutic diet for two or three weeks, and tremendous bacterial invasions produced, and who exhibited pictures of animals and of cuttings of jaws which showed rapid correction of inflammations in these localities by anti-scorbutic diets, will understand this condition. Or if you have followed the work of Mennell, of Harvard, and of McCullon, of Baltimore, who have been experimenting with diet on animals with rickets, you will admit that the proof is well adduced; that we can create conditions by faulty diet, that lead to swift bacterial invasion, and aid in the production of pyorrhœa.

It is equally certain that when you break the dental arch and produce a malocclusion, in which the forces of occlusion amounting to about seventeen hundred pounds a day, as Dr. Black told us, and in many mouths amounting to a ton or two, congestions are induced that make bacterial invasions easy.

Accept my word for the fact that bacterial invasion is *positively essential* to pyorrhœa. Does the dental profession realize that? Do we teach that to our patients before we begin to treat for pyorrhœa? We should teach the patient that pyorrhœa depends on bacterial filth in the mouth. If we do not, are we fair to him? In order to succeed in the treatment of pyorrhœa, we must carry to the patient a comprehensive

knowledge of his condition; make him realize it. We must tell him what causes that condition, and enlist his assistance in fighting it. The simplest way to do that is to change the terms "bacterial invasion" and "bacterial masses" to "mold." Every housewife knows what mold is; every farmer knows that moldy corn will not sprout and grow and will cause disease in animals to which it is fed; the millers in the mills who have to keep their millstones and rolls clean, know that mold is objectionable. Nearly everyone knows that mold is a form of parasitic growth that is inimical to the best interests of anything upon which it appears.

I am going to give you a little chapter of experience which I hope will help you. *It is useless to treat pyorrhoea as we have been treating it.* I have made a lot of mistakes. I recall the time when I thought it necessary to treat pyorrhoea with instruments only, and I thought it necessary to have a certain kind of instrument, and that if we did not have that kind of instrument, we were damned.

There is nothing in that.

If I were given the choice of treatment by a man who understands how to teach me the bacterial origin of pyorrhoea, and how to prevent that bacterial growth from day to day, or the treatment of a man who does pyorrhoea treatment with one hundred and fifty planes or scrapers, without having a comprehensive idea of why I have pyorrhoea, I would go to the man who *does not use a steel instrument at all*; because, in the University Teaching Hospital, where I have had eighty beds under my care for five or six years, we take the average case of pyorrhoea or gingivitis and without the use of instruments except in the very limited way mentioned later, we expect all the bleeding and almost all of the pus flow to *stop in ten days!* Why? Because we teach those patients how to take the bacterial mass off the teeth and *keep it off*, and then the pus-flow ceases, and the gingivitis gets well of itself.

I draw your attention to the fact that when you have a hernia, you build it up by overlapping the fascia and stitching them together to hold the hernia in. If you treat that hernia with ordinary catgut, the catgut is absorbed and the hernia bursts through again. So we have to use a different catgut, sometimes "twenty-day gut," and sometimes, with a big hernia, "thirty-day gut," because these each have been prepared so that it takes twenty days of effort by the absorbing cellular organisms to break them down, or thirty days, as the case may be.

As soon as you have established the habit of absolutely cleansing all of the teeth from the masses of bacteria that grow on them, which I tell my patients is mold, so that there is no more ingress of mold under the gum, immediately the circulatory organisms in the ulcer begin to absorb the deposit, and at the end of six or eight months most of those bunches of calculus are gone, just as the catgut is eventually taken up in the abdominal wound.

I do not advocate waiting and leaving those masses of calculus on the roots, for Nature to handle, because it is a short cut to take them off and stop all pus-flow in a week or two—within a day or two, oftentimes. The deposit on the root is the result of inflammatory action. It is poured out into the wound, and the acid excrement of the bacterial growth precipitates it, and it is glued onto the surface of the root by the mucin, which acts as a holding agent; and the minute you cut off the bacterial invasion, and the inflammation stops, Nature begins to do what she always does, correct the irritating agency by absorbing it.

There has been great progress made in our knowledge of mouth growth that is inimical to the body. I am going to make a brief statement of the damaging bacteria I know to exist in the mouth. Roughly speaking, half the growth on every tooth-neck is streptococcus viridans; one-fifth of the growth is staphylococcus. The balance, thirty per cent., is made up, in the order of their damaging possibilities, of pneumococci, fusiform bacilli and accidental thread forms. I mean that the latter type of bacterium is not a constant inhabitant of the buccal cavity, and it not always present.

The human mouth is born sterile. Blavatsky, of the Pasteur Institute, published a splendid paper on that subject in 1915. The human mouth is sterile at birth. It takes up streptococci as soon as the baby's mouth goes to the mother's breast, because on the skin of the nipple there is an abundance of streptococci. Streptococcus is almost universal; it is in the dust of the streets, in the dust of our homes, everywhere, always. These little cheeses that are wrapped in blue ribbon and tinfoil and which look so good to eat, are about half streptococci. And milk! I once served on the Hennepin County Milk Committee. Farmers used to bring in milk that would run a million bacteria to a centimeter! The idea of feeding babies milk like that! It was mostly streptococcus viridans, the greatest acid maker of them all.

Here is a little legend about the importance of bacteria: Why don't you know about it? Why isn't it a living entity to you? It is because you don't appreciate it. The subject of bacteriology is the most important subject of which I know anything. Human life on this earth would, of course, be impossible if it were not for bacteria. None of us would be here if it were not for bacteria. Why? Because every bit of cellular construction, the oak tree, the flower, the plant, the human body, the animal body, without the action of bacteria *never would decay*. True, the human body might dry up, like those found in the pyramids, but it never would disappear. The plant, the flower that blooms to-day, would dry up, but it would lie where it fell until Gabriel blew his trumpet; and the oak tree would stay until the end of time; and that blanket of undecayed vegetation would kill out everything necessary to support life, and we shouldn't be able to live here.

Why do those things go back to the soil? Because the Lord in His wonderful knowledge of what was needed to support life in its endless cycle created the little insignificant bacterium, which takes each cellular element back into the soil—tears it down and sends it back, to be used over and over again. I don't know but what parts of my body may have been used fifty thousand years ago to build the body of a red Indian or an animal. These bacteria make it possible for us to go on and live and propagate. The principal work of a bacterium is destruction, and if it becomes a parasite, it destroys whatever it is on.

It is said that, "A clean tooth never decays." What do we mean by a clean tooth? One that is white and shining? No. What we mean is a tooth on which bacteria are not growing. There are just two things to remember about the destructive power of bacteria as far as the teeth are concerned. The destruction of a tooth surface, coated with enamel, depends on the excrement of the bacteria, which is acid. If it were not for that acid excrement, the tooth itself would never break down. The destruction of its environment and the formation of pus in the soft tissues depend on digestive ferments. Such ferments have the power to turn the fixed cell into a fluid on which it may live; and so it tears down, and, unfortunately, it does something the soil bacterium doesn't do. It has two methods of attack. The excrement of the soil bacterium is a good thing and helps the soil, feeds it. Its destructive or its disintegrating power is its valuable characteristic. But the

excrement of the mouth bacterium is bad, because it dissolves the enamel coat, and opens up the way for congestion and the subsequent loss of the matrix.

In talking with my patients as they come in, I say, "What I mean by a clean tooth is a tooth free from mold." If you talk about bacterial masses, they smile, but do not understand, and of course, do not act upon your word. I remember one old professor who taught me—he was a Dane. He used to say, "Use your eyes, and your nose, and your taste; use every faculty you have in diagnosis." Once, when doing a gall-bladder operation, to illustrate his point, he touched a finger to the bile, and then touched his tongue, and we all did the same! Then he said, "You fools; didn't you notice that I put a different finger into my mouth than the one with which I touched the bile?" That lesson never left me. When I have a patient who has a dirty mouth, I tell him first that his mouth is unclean. The fastidious ones at times are offended. Then I take a scraper and scrape the tooth and put the scraping on the index finger of the patient, and tell him to roll it around between finger and thumb until that bacterial mass is well kneaded and smeared, and then tell him to smell it. That is a good way of impressing the patient with the fact that there is something on the teeth that is objectionable. Then I take a disclosing solution and flow it on about a quarter of the teeth, give the patient a mirror, and say to him, "When I shoot a stream of water over those teeth, wherever they are free from mold the stain will wash off instantly." And in every pyorrhetic mouth, unless the patient scraped his teeth just before he came to the office, we will find great masses of mold and bacterial life.

The next step is to teach him how to take off the mold, and if the patient understands the relation of the mold to pyorrhœa, it is easy.

Ordinary instrumentation and depending on the patient coming to you once a week or once a month for several years maybe, is begging the question, and you eventually lose out. Whereas, if you teach the patient the etiology and visualize it to him, and in commenting on the situation, say, "If you had a servant so careless as to serve food in that condition, you would at once discharge that servant," and "How can you bear to put those teeth through your food when they stink, and rub that stinking stuff into the food that goes into your stomach?" you will get real results. I appeal to my patients

by every possible means to create distaste for the condition present in their mouths.

After doing that I take a tooth brush, and teach them how to take off the bacterial masses and keep them off; and I get a promise from them that they will spend fifteen minutes of every day in maintaining a condition of bacterial and mold freedom. If they refuse to co-operate, I extract the teeth. I am not in sympathy with those who are practicing pyorrhœa treatment and having their patients come back once a week or once a month for long periods. I teach my patients that if they do as I direct, they need come back only once or twice a year to have the calculus removed that is deposited in such positions that they cannot reach it; and I teach them that when they are once cured, they are cured "for keeps." I am endeavoring so to simplify the treatment of pyorrhœa that it will be treated successfully and completely eradicated.

Unless you grasp the common fundamental facts about bacteriology, and use them for the benefit of your patients, you are far from fulfilling your function as dentists. I have been called to speak to as many medical as dental associations in the last few years; and the medical men of New York, in their one hundred and eleventh session, when I took part in the symposium in discussing the glandular infections of the body, giving my views from the mouth standpoint, told me that they welcomed me because they realized that dentistry was a specialty in medicine, and they gave me the right-hand of fellowship. And they are trying to give you the right-hand of fellowship. The trouble with the dental profession is that we have been called to the wedding, but we haven't put on the wedding garment. The way for dentistry to get this garment on is to accept the fact that the bacteriology of the mouth is a potent thing, lying at the gateway of success as a specialty. We want to make potent use of this type of work in the mouth, and the moment we become able to teach our patients the reasons for things, we will have the most delightful period of practice we ever have experienced. Nothing can give greater satisfaction than to treat a case of pyorrhœa or mouth infection, in which the teeth are loose and wobbly, and actually see them tighten and stay tight and quickly return to normal.

A few weeks ago I held a clinic in my office during what is known as "Medical Week." There were four thousand physicians from the Northwest, from Montana, the Dakotas, Wisconsin and Iowa invited. All the men in the medical profes-

sion who have anything to offer are asked to give a clinic during "Medical Week." As I belong to the Medical Society I volunteered this clinic: I sent out into the country and asked a farmer who had been a patient of mine a year before. He had been sick for two years and was running a temperature. His physician did not want to operate, and sent him to me. I found his teeth coated with mold from the cutting edges to the gums. The teeth were very loose, and I recommended extraction. This man was a Hungarian. He never had seen a tooth brush, much less owned one. I said: "John, your mouth is full of mold. Do you know what mold is?" "Yes." "Your teeth are moldy. These teeth are so loose they should be extracted." He said, "I don't want them extracted." When I got ready to extract, he backed away, and begged so hard to keep his teeth that finally I said, "If you will do exactly as I tell you, there is a chance that you may keep those teeth."

The central incisors below had less than an eighth-inch of attachment in the socket; they wobbled badly, and I thought I was foolish to leave them in; but he pled so hard that I consented to do so. I showed him the moldy coat. I removed the calculus and taught him how to use a tooth brush. I got a promise from him that he would brush the teeth twenty minutes a day. It now has been a year since those teeth were treated, but they are as rigid as you could expect teeth to be that had less than a quarter of an inch of good bony socket, and they have been in hard and constant use. He has gained thirty pounds in weight, has gone back to his farm and is working like any other man. He came up from the country, spent a night each coming and going, and a day in my office, and showed his mouth to fifty physicians who visited me during the two days of my clinic.

His brother had the same type of case. In the molars in each case the bone was so badly absorbed I could push an instrument through between the molar roots, and yet those teeth, last week under the disclosing stain, showed nothing abnormal. They are solid and rigid, and the men are chewing on them. These men told their story over and over again to every one of those physicians who was interested.

The method of my clinic was to splash disclosing stain on the teeth of one of those doctors and say, "This is streptococcus, staphylococcus, pneumococcus," and so on. And then I had them put their fingers on the teeth of those two

men and test them. After putting disclosing stain on the teeth of the physicians, I took a tooth brush and cleansed their teeth myself. I believe it was an effective lesson.

I could bring you a hundred cases that have been cured of pyorrhea, and cured for from one to five years. The secret is in demonstrating to the patient that his teeth are moldy, teaching him how to keep those mold masses off, and helping him to form the habit of keeping them bacteria-free. Whenever patients come back to check up, if there is a spot they have missed I call their attention to it and clean it myself. Frequently the anterior half of the mouth is clean, but the molar teeth are unclean; or perhaps the whole mouth is clean except the back of the third molar. I teach them how to clean those places, give them a prescription for disclosing stain, which I advise them to use twice a week after they have cleansed their teeth, to see whether they have taken the bacterial mass off. The whole secret is to get rid of the bacterial growth and keep the teeth free from it.

I want to discuss a little further this question of the cause of pyorrhea. Malocclusions certainly ought always to be corrected. You demonstrate malocclusions by the use of carbon paper, by taking casts, by mounting the models on articulators, and studying the occlusion; and then you must correct it. Every line in a human tooth means something; remember, that every curve and contour has a purpose. The "tin-can crown" never was meant as a preventive of gingivitis! One of the most encouraging signs of the times is that our dental teachers are dwelling vigorously on restoring toothform in such a way that all of the protective lines of the human teeth are re-created in the crowns, instead of making them a mere slip-on cap.

All types of mechanical irritation around teeth must be eliminated if the bacteria are not to break through the doors made by the congestion caused by such irritants.

There is a group of men who grind and polish teeth a great deal. They grind them so much that at times they ruin them. There is one simple rule for mechanical interference in treating pyorrhea that stands, and it is this: Cleanse the teeth carefully with a tooth brush; apply disclosing stain, and wherever disclosing stain is retained on the teeth it will be because the acid created in the course of bacterial growth has etched little shallow furrows or serrations in the tooth surfaces that hold and retain the bacteria that the brush can not

reach. Then take a stone, sharpened to a point by holding a fissure-shaped carborundum stone on it, and go after those little areas that still contain the stain, and level them out. The Lord does not intend that we should grind these teeth much, and you are only grinding them to make it possible to sweep the bacterial growth off with the brush.

Why is it that these bacteria accumulate so rapidly and so constantly? The streptococcus in glass is seen to double about every twenty-two minutes; in the mouth every thirty-five minutes. Its excrement accumulates to a point where it acts as a deterrent to further growth. If it were not for that the bacteria would completely fill the mouth in a short time; but they cannot go on multiplying. They limit themselves.

I will give you the prescription for a disclosing stain. I will ask you to use it systematically for one month. Then if you have the heart to give it up, you deserve to go where I know you will go! The following is a prescription for one ounce of the solution: fifty grains of iodin; fifteen grains of zinc iodid, fifteen grains of potassium iodid, four drachms of glycerin. Put these in a mortar and triturate them until they are smooth. Then pour out that mixture and take four drachms of water and wash out the mortar. I have dictated this carefully, because I have seen that prescription published many times and seldom correctly. If you mix all the ingredients together and pour the solution all out at one time it won't stain the bacteria. The reason is that the glycerin sticks to the mortar, and holds a lot of the salts. You don't get it all, and of course it is not right. The *compounding* of that prescription has everything to do with its value. The solution is exactly right. It will not burn the tissues, it will reveal the bacterial mass, and it is healing for turgid and swollen gums. Use the four drachms of water to *wash out the mortar*, and get it all out, and you will have a solution you will enjoy using. Give this prescription to the patient, first demonstrating to him the bacterial masses on the teeth by using it. Observe that when you flush it off the teeth and find stained masses over little white oval decalcified areas that you will soon learn to know, without using the explorer, where to find cavities.

If the sainted Dr. Black had only made the idea stick, which he did not although he tried hard enough, he would have adopted a different slogan than "Extension for Prevention." He never would have needed to teach extension of the cavity cutting for prevention if he could have gotten this idea to

stick, because it is not necessary; but it was too early. I don't know whether you are ready for it even now; but if this idea sticks you will give up extending cavities for prevention; you will clean the teeth for prevention, because the only thing in the mouth that makes cavities is bacterial mold. Your worst pyorrhœa pockets are between the teeth, because the bacterial masses there are heaviest because undisturbed and hardest to remove.

In using the tooth brush start working the bristles in between the teeth. We want a brush with wide spaces between the bristle-tufts and rows, and with stiff bristles, so they can be inserted between the teeth. The bristles must be worked in between the teeth to displace the bacterial masses that reside there.

In cleansing the upper teeth, place the tooth brush points away from the gum, and let a tuft of bristles extend beyond the last tooth. With a gentle jiggle move the tooth brush a little back and forth, about the sixteenth of an inch, until the bristles slip up the contoured convex crown, and fall in between the teeth. Then drive them in with force by a little short movement and press the sides of the bristles against the gum, and let the tooth brush work back and forth. It is a great mistake to move it too much, as the bristles do not remain in place, but leap in and out. That injures the gums, and does not cleanse. The bristles are to be deflected away from the gums. They must slip by with gentle pressure until the bristles have entered the spaces between the teeth; and then, when entered, deflect away from the gum; squeeze them in far enough so that the spaces are filled with bristles, so that the sides of the bristles cleanse as well as press the gum. If you had a swollen finger, you would not massage it toward the finger tip, but away from the tip. You would drive the fluid out of the finger back toward the heart. If we gently slip the bristles in between the teeth and with gentle pressure squeeze the gums a little, we empty out the congested blood, and carry the bacteria which are massed in the gums out into the circulation where the phagocytes can attack and destroy them.

I have had three classes in the Southwest recently, and started thirty men each time with a case. We started by putting a patient in the chair, and after giving him an idea of the cause of pyorrhœa, I asked each one of the class to demonstrate to the patient what I have been telling you. I had asked members of the class to bring their pyorrhœa instruments

with them, the ones they could best work with. I said to them: "Carry the first patient through the entire week with nothing but mouth and tooth cleansing as described, and the other ones you may operate upon as usual with your instruments." We endeavored to make diagnosis and prescribe what should be done for every case. At the end of the week those men without exception said: "Where can we buy tooth brushes?" They had less use for their instruments.

I don't believe there was a single doubter among the hundred men. They were so won by the logic of the situation shown by that single case for a week that they all wanted these tooth brushes. My brushes are not perfectly ideal, but they are the best I can buy.

Patients will come back exhibiting areas that they cannot cleanse with the brushes they have. Then get brushes that they can cleanse them with. For the inside of the arch it is better to have a small brush. Most makers make them too big and clumsy, and the bristles so packed together that you cannot insert them between the teeth. The patient must be willing to give as much time to the work as is necessary, at least fifteen minutes a day. If the patient has a space between molars that he cannot reach with a particular brush, supply him with a smaller brush that he can get into that space. It has been a joy to see the results of this treatment.

Where are the brushes to be had? you will ask. The Canadian Oral Prophylaxis Association has been making good brushes. I have bought many gross. I tell you that to show you I am practicing what I teach. Now, who originated this brush idea? Dr. Henry Barnes, of Cleveland, Ohio, first wrote a paper on interdental brushing. His scheme was to prepare little brushes, and insert them between the teeth, and he advised keeping the brushes soaked in water. The men who followed Dr. Barnes and grasped that thought and amplified it, are Drs. Charters, of Des Moines, and Morton, of Milwaukee. I have been doing this more or less successfully for some years, and am prepared to say that is the greatest single advance in the production and maintenance of clean mouths that has been made in the last fifty years.

I said that diet affected the condition of immunity from or ease of bacterial invasion, and it surely does. One of my friends in Minneapolis said a few days ago that he had no use whatever for a tooth brush. He said he controlled such conditions by diet. Analyze that thought. Can you influence any

great number of people as to diet, and get them to maintain it for any length of time? Diet is a matter of habit cultivated from the cradle up; and while you may advise people not to eat too much sugar, and salt, and fats, and heavy meats, and to eat more grain, fruits and vegetables, you have no assurance that they will do it. You will not have much success in trying to influence people toward diets that are markedly different from that they are following. You can create a new habit much easier than you can break up an old one. Eating certain kinds of food is a habit of the palate, and it is discouraging to try to change a diet in a patient; but I can create a new habit without much trouble.

An advertising dentist attended one of my clinics. I did not know who he was. Three or four days afterward he came back. He said: "Dr. Hartzell, can I get some more of those tooth brushes?" "Yes, you can buy them, or if you want some of mine. I will let you have them." He got three or four dozen. He said: "It is the first time I have had the feeling of a clean mouth, and I want some of these for my own use until I can get some from the manufacturers, and I want to use some of them on my patients."

The grinding of teeth to secure good occlusion is to me the hardest thing in the treatment of pyorrhœa. I can stimulate the interest of my patients and hold them to the following of my instructions very well; but I cannot always tell when to grind and when not to grind teeth to correct occlusion. In a nutshell, however, my treatment is this: *Maintain a clean mouth. Learn to remove bacterial growth. Teach the patient the importance of it. Explain the method with tooth brush in place in the mouth; place and hold it there yourself; use the tooth brush in the patient's mouth yourself. Keep at it until you know that the patient can use it properly.*

In the past year I have had some blood pressures of two hundred and thirty and two hundred and forty fall to normal on removing the bacterial mouth-factor. Of course, there are many other things that create hypertensions besides mouth infections; but when mouth infections are found, and you correct them, you are doing your patient a very great service.

When you insert an instrument under the gum to remove deposits of calculus, be very gentle about it, and don't cut too deep. You had better cut too thin than to open up the cementoblast in the cementum to infection.